UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Ex parte MICHAEL ROBOTHAM

Appeal No. 2006-0469
Application No. 09/534,922

ON BRIEF

Before PATE, McQUADE, and DELMENDO, Administrative Patent Judges.

McQUADE, Administrative Patent Judge.

DECISION ON APPEAL

Pursuant to 35 U.S.C. § 134(a), Michael Robotham originally took this appeal from the final rejection (mailed February 26, 2003) of claims 28-40 and 42-53. As the appellant has since canceled claims 28-30, 32-40, 42, 43 and 45-53 and rewritten claims 31 and 44 in independent

form, the appeal now involves claims 31 and 44, the only claims currently pending in the application.

THE INVENTION

The invention relates to "a sealing assembly for use in a rolling mill" (specification, page 1). Claims 31 and 44 read as follows:

31. A sealing assembly for use in conjunction with a rotatable tapered section of a roll neck which is part of a roll of a rolling mill, said sealing assembly having a first bearing element mounted on said rotatable tapered section and at least partially opposing a fixed second bearing element to define a contact surface therebetween which is adapted to receive lubricant, wherein said fixed second bearing element comprises a flexible seal element that includes:

a substantially annular body;

two shoulders that are each radially raised from an inner portion of said substantially annular body;

two circumferential lips that extend in opposing angular directions from said two shoulders, wherein one of said two circumferential lips is operable to substantially prevent water leakage from the roll and the other of said circumferential lips is operable to substantially prevent lubricant passage from the contact surface;

a lantern ring that is operable to drain lubricant between said two circumferential lips;

wherein said flexible seal element is a singular integral structure; and

wherein the fixed second bearing element comprises a support recess to seat said flexible seal element, wherein

an outer surface of said support recess is defined by a clamp that is releasable by removal of a fastener.

44. A sealing assembly for use in conjunction with a rotatable tapered section of a roll neck which is part of a roll of a rolling mill, said sealing assembly having a first bearing element mounted on said rotatable tapered section and at least partially opposing a fixed second bearing element to define a contact surface therebetween which is adapted to receive lubricant, wherein said fixed second bearing element comprises a flexible seal element that includes:

a substantially annular body;

two shoulders that are each radially raised from an inner portion of said substantially annular body;

two circumferential lips that extend in opposing angular directions from said two shoulders, wherein one of said two circumferential lips is operable to substantially prevent water leakage from the roll, the other of said two circumferential lips is operable to substantially prevent lubricant passage between from the contact surface, and said two circumferential lips comprise respective apical edges to contact said first bearing element;

wherein said flexible seal element is a singular integral structure; and

wherein the fixed second bearing element comprises a support recess to seat said flexible seal element, wherein an outer surface of said support recess is defined by a clamp that is releasable by removal of a fastener.

THE PRIOR ART

The references relied on by the examiner as evidence of obviousness are:

Franz et al. (Franz)	3,871,666	Mar. 18, 1975
Petros	4,063,743	Dec. 20, 1977
Simmons	4,898,479	Feb. 06, 1990

THE REJECTIONS

Claims 31 and 44 stand rejected under 35 U.S.C. § 112, first paragraph, as being based on a specification which fails to comply with the enablement requirement.

Claims 31 and 44 also stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Petros in view of Franz and Simmons.

Attention is directed to the main and reply briefs (filed October 6, 2003 and February 3, 2004) and answer (mailed December 3, 2003) for the respective positions of the appellant and examiner regarding the merits of these rejections.[1]

[1] In the final rejection, claims 31 and 44 also stood rejected under 35 U.S.C. § 103(a) as being unpatentable over Petros in view of Simmons. Since the examiner has not restated this rejection in the answer, we assume that it has been withdrawn. See Ex parte Emm, 118 USPQ 180, 181 (Bd. App. 1957).

DISCUSSION

I. The 35 U.S.C. § 112, first paragraph, rejection of claims 31 and 44

The explanation of this rejection (see pages 3 and 10 in the answer) indicates that the examiner considers the appellant's disclosure to be nonenabling with respect to the claimed invention due to the presence in claims 31 and 44 of the limitation requiring the flexible seal element to be "a singular integral structure." According to the examiner, the underlying specification and drawings lack support for this term and instead teach that the flexible seal element consists of multiple members or parts rather than "a singular integral structure."

The dispositive issue with respect to the enablement requirement of § 112, ¶ 1, is whether the inventor's disclosure, considering the level of ordinary skill in the art as of the date of the application, would have enabled a person of such skill to make and use the claimed invention without undue experimentation. In re Strahilevitz, 668 F.2d 1229, 1232, 212 USPQ 561, 563-64 (CCPA 1982). In calling into question the enablement of the disclosure, the

examiner has the initial burden of advancing acceptable reasoning inconsistent with enablement. Id.

In the present case, the appellant's disclosure teaches that the flexible seal element 13 comprises an annular polymeric (e.g., elastomeric) component defining a main body 27, shoulders 24a, lips 22a, 22b, and peripheral ends 28a, 28b (see Figure 2), a lantern ring 23 incorporated between the shoulders and within the main body, and garter springs 25a, 25b disposed in cut-away portions of the peripheral ends. Given this disclosure, one of ordinary skill in the art would have readily appreciated the annular polymeric component, the lantern ring and the garter springs to be joined in a unified cohesive assembly. Thus, although the specification does not expressly describe the seal element 13 as "a singular integral structure," this language accurately portrays the seal element parts in their disclosed integrated state. The examiner has failed to cogently explain, and it is not evident, why the seal element is not "a single integrated structure" merely because it is constructed of multiple parts or elements.

Hence, contrary to the position taken by the examiner, the appellant's disclosure does provide support, albeit not literal support, for the claim terminology in question. The examiner has not advanced any persuasive reasoning as to why the appellant's disclosure would not have enabled the artisan to make and use, without undue experimentation, a sealing assembly as recited in claims 31 and 44 having a flexible seal that is "a singular integral structure."

Accordingly, we shall not sustain the standing 35 U.S.C. § 112, first paragraph, rejection of claims 31 and 44.

II. The 35 U.S.C. § 103(a) rejection of claims 31 and 44 as being unpatentable over Petros in view of Franz and Simmons

As framed and argued by the appellant, the dispositive issue with respect to this rejection is whether the applied references would have rendered obvious a sealing assembly responsive to the limitations in claims 31 and 44 requiring the fixed second bearing element to comprise a support recess to seat the flexible seal element wherein an outer surface of the support recess is defined by a clamp that is releasable by removal of a fastener.

Petros, the examiner's primary reference, discloses a sealing assembly for use in a rolling mill. As shown in Figure 1, the rolling mill and sealing assembly components include a rotatable mill roll 14 having a tapered roll neck 12 and a surrounding neck sleeve 32, a roll neck wear ring 20 bolted to the end face 22 of the mill roll, a stationary roll chock 16 having a bearing sleeve 34, a seal holder 18 bolted to the roll chock and a sealing arrangement 10 disposed between the roll neck wear ring and the seal holder. As described by Petros,

> . . . the sealing arrangement 10 comprises a pair of rubbing seals 38, 40 which desirably are disposed opposing, each other between the sealing arrangement holder 18 and the roll neck adaptor 20. The rubbing seals 38, 40 can be fabricated from an elastomeric material such as nitrile and are stabilized by a steel band 42 or 44. The rubbing seals 38, 40 together with their reinforcing bands 42, 44 extend continuously and circumferentially about the adjacent portions of the roll neck 12. In the illustrated embodiment of the invention the rubbing seals 38, 40 are captivated between shoulder 46 of the holder 18 and a snap ring 48 or the like seated in groove 50 of the aforesaid holder.
>
> When thus disposed the rubbing seals 38, 40 define a grease or other sealing fluid band 52 therebetween which likewise extends continuously and circumferentially about the roll neck 12 and the roll neck adaptor 20. The sealant band 52, as confined and delimited by the rubbing seals 38, 40, also extends radially from the rotatable member or roll neck adaptor 20 to the stationary

> member or holder 18. The sealing band 52 of lubricant communicates with lubricant passage 54 extending radially outwardly through the sealing arrangement holder 18 and terminating in a threaded fitting engagement area 56. A suitable source 82 of pressurized lubricant or other sealing fluid is coupled thereto as described below.
>
> The aforementioned sealant band 52 is defined by the rubbing seals 38, 40 which are relatively closely spaced for this purpose between the rotatable and stationary members (in this case the roll neck adaptor 20 and holder 18) by a number of protuberances 58, 60 extending respectively from the rubbing seals 38, 40 and positioned for engagement therebetween. The protuberances 58, 60 desirably are formed integrally and respectively with the rubbing seals 38, 40 and can be equally spaced around the confronting surfaces thereof for abutting confrontation as shown in the drawing FIGURE. Obviously the protuberances can be extended from a single one of the rubbing seals 38, 40 so as to abut the other rubbing seal directly [column 3, line 33, through column 4, line 6].

The appellant does not challenge the examiner's determination (see page 5 in the answer) that Petros teaches or would have suggested a sealing assembly responsive to all of the limitations in claims 31 and 44 except for those requiring (1) the flexible seal element to be "a singular integral structure" and (2) the fixed second bearing element to comprise a support recess to seat the flexible seal element wherein an outer surface of the

support recess is defined by a clamp that is releasable by removal of a fastener. As indicated above, the flexible sealing arrangement 10 disclosed by Petros consists of physically separate rubbing seals 38 and 40. Moreover, while Figure 1 shows the fixed second bearing element disclosed by Petros to comprise a support recess in seal holder 18 for seating the flexible sealing arrangement 10, the outer surface of this support recess is defined by a snap ring 48 held in a groove 50. To cure these shortcomings in Petros vis-à-vis the subject matter recited in claims 31 and 44, the examiner turns to Franz and Simmons.

Franz discloses a shaft packing comprising elastomeric sealing elements 1 and 2 which can be made as separate pieces (see Figures 1 and 2) or as one piece (see Figures 3 and 4). The appellant does not dispute the examiner's conclusion (see page 5 in the answer) that it would have been obvious in view of this teaching to form the separate seals 38 and 40 disclosed by Petros as a singular integral structure.

Simmons discloses a rolling mill arrangement similar in many respects to that disclosed by Petros. In this

regard, the Simmons arrangement includes flexible seals 38 and an outer seal ring 36 that correspond generally to the flexible seals 38 and 40 and seal holder 18 in the Petros arrangement. Simmons' Figure 2 shows the flexible seals 38 seated within a support recess in the upper surface of the seal ring 36 with the outer surface of the recess (the vertical side of the recess closest to roll body 10) defined by an unnumbered element which is cross-hatched differently than the seal ring.[2] Figure 2 also shows a line extending through the unnumbered element into the seal ring 36. Simmons does not contain any disclosure other than that embodied by Figure 2 as to the nature of the unnumbered element or the significance of the line extending therethrough.

The examiner (see page 5 in the answer) identifies the unnumbered element as a clamp that is releasable by removal of a fastener and concludes that it would have been obvious in view of its disclosure by Simmons to substitute such a clamp for the corresponding structure in Petros, i.e., snap ring 48.

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[2] The annotated versions of Figure 2 appearing on page 9 in the answer and in Exhibit A appended to the reply brief denote the unnumbered element as "Clamp" and "C," respectively.

The appellant's position to the contrary (see page 8 in the main brief and pages 4 and 5 in the reply brief) essentially focuses on perceived deficiencies in Simmons.

Many of the appellant's criticisms of Simmons are well founded. The most salient of these relate to the fact that Simmons does not describe the unnumbered element shown in Figure 2 and does not describe or show a fastener, let alone a removable fastener, associated with this element. Nonetheless, a drawing is available as a reference for all that it teaches to a person of ordinary skill in the art. In re Meng, 492 F.2d 843, 847, 181 USPQ 94, 97 (CCPA 1974). In other words, things clearly shown in a drawing of a reference, even if unexplained elsewhere, are not to be disregarded in determining patentability of a claim. In re Mraz, 455 F.2d 1069, 1072, 173 USPQ 25, 27 (CCPA 1972).

Simmons' Figure 2 clearly shows the unnumbered element at issue as distinct from the seal ring 36 to which it ostensibly is attached. The examiner's assessment that this unnumbered element is a clamp to the extent broadly disclosed (as element 14) and claimed by the appellant is reasonable on its face. The line shown in Figure 2 as extending through the unnumbered element into the outer

seal ring 36 is similar to the line illustrated in Figure 1 of the instant application as extending along the axis of the cap screw 15 that fastens clamping means 14 to the seal support means 17. Here again, the examiner's determination that the line in Simmons' Figure 2 would have suggested a fastener for attaching the unnumbered element to the outer seal ring 36 is reasonable on its face. A person of ordinary skill in the art, viewing the collective teachings of Petros and Simmons, would have readily appreciated the snap ring disclosed by Petros and the unnumbered element shown by Simmons to be corresponding structures serving the same function in essentially identical environments. In light of this appreciation, the artisan would have found it obvious to replace the snap ring of Petros with the unnumbered element or clamp of Simmons as a simple matter of choosing one art-recognized alternative over another. Furthermore, the inherently removable nature of Petros' snap ring 48 would have suggested the use of a removable fastener to fix the clamp in place for the self-evident purpose of facilitating inspection and/or replacement of the seal members seated in the recess bounded by the clamp.

Thus, considering the totality of evidence and argument before us, the examiner's conclusion that the differences between the subject matter recited in claims 31 and 44 and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art is well founded.

Consequently, we shall sustain the standing 35 U.S.C. § 103(a) rejection of claims 31 and 44 as being unpatentable over Petros in view of Franz and Simmons.

SUMMARY

Since one of the two rejections of claims 31 and 44 is sustained, the decision of the examiner to reject these claims is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a).

AFFIRMED

WILLIAM F. PATE, III)
Administrative Patent Judge)
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